4.2.1 Direct-Push Technology Surface Soil Sampling

DPT surface soil samples (0 to 1 foot bgs) were collected at six buildings of the GFC, where prior sampling had indicated potential for exterior contamination in soil. Contaminants of concern for analysis—specified building by building / area by area—included VOCs, SVOCs, and PCBs. At least one surface soil sample was collected within the footprint, around the perimeter, and upgradient/downgradient of each of the following buildings:

- Building 107
- Building 136 F
- Buildings 102 E, J, & K
- Building 102 A/B/C
- Building 104 A/B/C/D
- Buildings 108 A & 111.

Samples were collected for laboratory analyses listed in Table 2 in Appendix B.

Tetra Tech collected surface soil samples where DPT soil sampling occurred. Tetra Tech collected surface soil samples by use of a Geoprobe Macro-Core sampler fitted with disposable polyvinyl chloride (PVC) or acetate liners. Soil samples were collected in general accordance with EPA Environmental Response Team (ERT) SOP 2012, *Soil Sampling* (EPA 2000) and EPA SOP 4230.07, *Geoprobe Operation* (EPA 1995a).

At each boring location, a soil core was collected within 0 to 4 feet bgs. Surface soil samples were composite samples (for non-VOC analyses) consisting of multiple aliquots from the 0- to 1-foot bgs interval of DPT soil borings described in Section 4.2.1. Surface soil samples for VOC analysis were grab samples from selected DPT borings within the 0- to 1-foot bgs interval within each area.

Soil to be analyzed for VOCs was sampled by use of a TerraCore sampling kit (refer to EPA Method 5035 – *Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples* [EPA 1996]). Soils for composite samples to be analyzed for SVOCs and PCBs were removed from the PVC or acetate liner and placed in a disposable Ziploc® bag for homogenization, and then transferred to laboratory-supplied containers.

4.2.2 Direct-Push Technology Sub-Surface Soil Sampling

DPT sub-surface soil samples were collected at six buildings/areas of the GFC where prior sampling had indicated potential for exterior contamination in soil. Contaminants of concern for analysis—specified

building by building / area by area—included VOCs, SVOCs, and PCBs. DPT soil samples were collected within the footprint, around the perimeter, and upgradient/downgradient of each of the following buildings/areas:

- Building 107
- Building 136 F
- Buildings 102 E, J, & K
- Building 102 A/B/C
- Building 104 A/B/C/D
- Buildings 108 A & 111.

Samples were collected for laboratory analyses listed in Table 2 in Appendix B.

Tetra Tech collected DPT soil samples by use of a Geoprobe Macro-Core sampler fitted with disposable PVC or acetate liners. Soil samples were collected in general accordance with EPA Environmental Response Team (ERT) SOP 2012, *Soil Sampling* (EPA 2000) and EPA SOP 4230.07, *Geoprobe Operation* (EPA 1995a).

At each boring location, a continuous soil core was collected in 4-foot segments. Each 4-foot core interval was screened for contamination by use of a hand-held photoionization detector (PID) and via visual and olfactory detections. Tetra Tech generated a detailed boring log of lithologic variation, moisture content, and evidence of potential contamination. These logs were prepared by a qualified geologist. Copies of all boring logs generated for the RI are in Appendix C.

At each boring location, two samples were collected within the zones indicating highest apparent contamination based on historical operations, PID readings, or visual or olfactory evidence. In the absence of a zone of contamination, subsurface soil samples were collected within approximately 4 to 8 feet bgs and directly above the water table or refusal, whichever was encountered first.

Soil to be analyzed for VOCs was sampled by use of a TerraCore sampling kit (refer to EPA Method 5035 – *Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples* [EPA 1996]). The remaining soil was removed from the PVC or acetate liner and placed in a disposable Ziploc® bag for homogenization, and then transferred to laboratory-supplied containers.

4.2.3 Direct-Push Technology Groundwater Sampling

DPT groundwater sampling was co-located with DPT soil sampling locations where historical operations, analytical data, or DPT logs indicated potential for legacy groundwater contamination associated with

6.3 DIRECT-PUSH TECHNOLOGY GROUNDWATER

DPT groundwater sampling was attempted at six buildings/areas of the GFC, where prior sampling had indicated potential for exterior contamination in soil. Sampling was attempted within footprints, around perimeters, and upgradient/downgradient of these buildings/areas. Groundwater sampling was attempted at each boring. However, hard clayey soils and/or other unknown sub-surface interference prevented the DPT from reaching groundwater static water depth at all but one boring.

Contaminants of concern for analysis–specified building by building / area by area—included VOCs, SVOCs, PCBs, and RCRA metals. Results were compared to MRBCA LDTLs and the most conservative non-residential and construction worker MRBCA Tier 1 RBTLs for groundwater under Soil Type 1 (sandy). These standards address the relevant exposure pathways, including dermal contact, ingestion, and inhalation of vapor emissions and particulates.

6.3.1 Buildings 108 A and 111

One groundwater sample (DPTGW-101) was collected from a boring (DPT-27) within the footprint of Building 111 (see Appendix A, Figure 9). DPTGW-101 was submitted for fixed-base laboratory analysis for PCBs. Table 9 in Appendix B lists PCB results from DPTGW-101.

No detections of PCBs or exceedances of any MRBCA screening levels were noted in groundwater sample DPTS-101.

6.4 GROUNDWATER ELEVATION MEASUREMENTS

One piezometer was installed at the very southeastern corner of the GFC for the sole purpose of acquiring water elevation data (see Appendix A, Figure 5). The piezometer was allowed to charge for 24 hours, but no groundwater was present within that time period. Hard clayey soils and/or other unknown sub-surface interference prevented the DPT from reaching groundwater static water depth. Moreover, throughout the site, groundwater was found in only one boring. Lack of encounter with groundwater throughout the RI prevented acquisition of usable groundwater elevation measurements.

6.5 BACKGROUND GROUNDWATER QUALITY

To evaluate quality of groundwater entering the GFC from the west, two DPT temporary monitoring wells were installed (see Appendix A, Figures 5 and 12). Groundwater was not encountered at either DPT boring location. Hard clayey soils and/or other unknown sub-surface interference prevented the